

TEMPERATURE-INDICATING DISPOSABLE LID FOR BEVERAGE CONTAINER

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims priority of U.S. Provisional Patent Application Serial No. 60/297,462 filed June 12, 2001.

5 STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not Applicable.

REFERENCE TO A MICROFISHE APPENDIX

Not Applicable.

BACKGROUND OF THE INVENTION

10 Field of the Invention

The present invention relates generally to disposable lids and, more specifically, relates to disposable lids having means for providing temperature indication of beverages within the associated disposable beverage containers, with the temperature-indicating means providing a reliable method of determining if a beverage is too hot for safe consumption.

15 Description of the Prior Art

It can be appreciated that disposable lids have been in use for years. Beverage container lids are well-known to prevent spillage of the liquid in the container. Typically, disposable lids are comprised of the following: (1) A flexible disc-like body; and (2) a slot opening at the periphery through which liquid flows from the beverage container to the user.

20 The main problem with conventional disposable lids is that there is no method to determine if the enclosed liquid is too hot to safely drink. In many cases, the users may burn their lips, tongue, and other oral surfaces due to their drinking of a liquid that is too hot. In addition, many people purchase hot beverages at fast food restaurant drive-up windows. These

people frequently take their first sip of that beverage while driving their vehicles. If the beverage they ingest is too hot, this can create a hazardous driving situation. Another problem with conventional disposable lids is that restaurants using these lids have faced lawsuits because they have served, and their clients have thereby ingested, liquids that have caused burns because they were too high in temperature.

In these respects, the temperature-indicating disposable lid for beverage containers according to the present invention substantially departs from the conventional concepts and designs of the prior art, and in so doing provides an apparatus primarily developed for the purpose of providing users of disposable beverage containers with a reliable method of determining if, before they drink it, a beverage is too hot in temperature to safely and comfortably imbibe.

A primary object of the present invention is to provide a temperature- indicating disposable lid for beverage containers that will overcome the shortcomings of the prior art devices.

An object of the present invention is to provide a temperature-indicating disposable lid for beverage containers for providing users of these beverage containers with a reliable method of determining if, before they drink it, a beverage is too hot in temperature to safely and comfortably imbibe.

Another object is to provide a temperature-indicating disposable lid for beverage containers that is inexpensive and cost-effective to produce.

Another object is to provide a temperature-indicating disposable lid for beverage containers that can be easily stacked for shipping and storage.

Another object is to provide a temperature-indicating disposable lid for beverage

containers that is easy for a user of any age and any intelligence level to use correctly.

Another object is to provide a temperature-indicating disposable lid for beverage containers that fits a wide variety of sizes of existing disposable beverage containers. Other objects and advantages of the present invention will become obvious to the reader and it is intended that these objects and advantages are within the scope of the present invention.

To the accomplishment of the above and related objects, this invention may be embodied in the form illustrated in the accompanying drawings, attention being called to the fact, however, that the drawings are illustrative only, and that changes may be made in the specific construction illustrated.

SUMMARY OF THE INVENTION

In accordance with the invention, a temperature-indicating apparatus is provided, and is adapted for use with a liquid container and a lid receivable at an upper portion of the container. The apparatus includes recessed means associated with a planar surface of the lid. The recessed means includes temperature threshold means for indicating the temperature of a liquid which contacts the threshold means, relative to a threshold temperature.

The recessed means includes a recess which downwardly projects from the planar surface of the lid. The threshold means may be positioned at a recess. The threshold means includes a patch of temperature sensitive material secured to the bottom of the recess. The recess and the patch form an enclosed structure, with an opening in the planar surface of the lid.

The recess extends downward into an interior of the liquid container, when the lid is received on the container. The recess extends downward a distance sufficient so that the threshold means is in physical contact with the liquid in the container, when the container is substantially full and the container is maintained in a level position. Correspondingly, the recess

extends downward a distance sufficient so that the threshold means can be made to be in physical contact with the liquid in the container by tilting the container, even when the container is less than substantially full with liquid.

5 The recess may be of a substantially conical configuration. Further, the lid can comprise means for releaseably securing the lid to the container. Still further, the lid may include means for a user gaining drinking access to the liquid in the container. The lids are stackable for shipping and storage.

BRIEF DESCRIPTION OF THE DRAWINGS

10 Various other objects, features and attendant advantages of the present invention will become fully appreciated as the same becomes better understood when considered in conjunction with the accompanying drawings, in which like reference characters designate the same or similar parts throughout the several views, and wherein:

FIG. 1 illustrates a top view of a disposable lid in accordance with the invention;

FIG. 2 illustrates a cross-sectional view of the disposable lid;

15 FIG. 3 illustrates the cross-sectional view of the lid while placed on a corresponding full beverage container; and

FIG. 4 illustrates the lid and beverage container in a tilted position.

DESCRIPTION OF THE PREFERRED EMBODIMENT

20 In view of the foregoing disadvantages inherent in the known types of disposable lids now present in the prior art, the general purpose of the present invention, which will be described subsequently in greater detail, is to provide a new temperature-indicating disposable lid for beverage containers that has many of the advantages of the disposable lids mentioned heretofore and many novel features that result in a new temperature-indicating disposable lid for

beverage containers which is not anticipated, rendered obvious, suggested, or even implied by any of the prior art for disposable lids, either alone or in any combination thereof.

To attain this, the present invention generally comprises the following: (1) a flexible, disc-like body; (2) a slot opening at the periphery; (3) a non-permeable tapered cylindrical protrusion (NPTCP), at the distal end of which there is a (4) temperature indicating tab, on which is a chemical or substance that is formulated to change color when a liquid that comes into close approximation with it reaches a particular temperature. The flexible disc-like body is the main, flat surface of the lid, usually constructed of flexible plastic. Located at the periphery of the flexible, disc-like body, the slot opening is roughly rectangular or square in shape, and is of sufficient size to allow passage of liquids contained in the beverage container. The non-permeable tapered cylindrical protrusion (NPTCP) is located across the flexible disc-like body from the slot opening. It projects perpendicularly approximately one and one-half inches from the main body of the flexible disc. It is of solid plastic, and therefore impermeable to liquids in the beverage container. Its widest point is at its base on the main body of the flexible disc. From there, the cylindrical structure tapers and narrows uniformly as it moves distally away from the main body of the flexible disc. At the distal end of this structure is a flat surface that is parallel to the main body of the flexible disc. This surface is called the temperature-indicating tab. This flat surface is smaller than the entrance to the NPTCP due to the tapering of the NPTCP. The NPTCP can be of varying lengths, of varying sizes (but must be large enough to adequately view the temperature indicating tab at the distal end), and may be of square or rectangular shape instead of cylindrical. The temperature indicating tab is a thin flat surface onto which a temperature-sensitive substance or chemical has been absorbed onto a porous or permeable substrate. This substrate is then completely enclosed by a thin, non-permeable layer

of plastic. The flat surface comprising the temperature-indicating tab is parallel to the main body of the flexible disc. There are several chemicals and/or substances that are temperature sensitive that could be used on the temperature-indicating tab.

There has thus been outlined, rather broadly, the more important features of the invention in order that the detailed description thereof may be better understood, and in order that the present contribution to the art may be better appreciated. There are additional features of the invention that will be described hereinafter.

In this respect, before explaining at least one embodiment of the invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and to the arrangements of the components set forth in the following description or illustrated in the drawings. The invention is capable of other embodiments and of being practiced and carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein are for the purpose of the description and should not be regarded as limiting. Turning now descriptively to the drawings, in which similar reference characters denote similar elements throughout the several views, the attached figures illustrate a temperature- indicating disposable lid for beverage containers, and, more particularly, to a disposable lid with a non-permeable tapered cylindrical protrusion (NPTCP) that extends into the liquid in a container, with a chemical or substance on the distal end that, upon approximation with the beverage in the corresponding container, changes color in accordance with the temperature of the liquid.

Following is a detailed description of the preferred embodiments: FIG. 1 illustrates the top view of the disposable lid, featuring the outside rim 10 that snaps onto the rim surrounding the orifice of the corresponding beverage container. The slot opening 12 at the

periphery allows the beverage to pass from the container to the user. Across the main body of the flexible disc 14, towards the periphery, is the NPTCP (16), at the bottom (distal end) of which is the temperature indicating tab 18. FIG. 2 illustrates the cross sectional view of the disposable lid, featuring the outside rim 10 of the main body of the flexible disc 14, and the NPTCP 16, at the bottom of which is the temperature indicating tab 18. FIG. 3 illustrates the cross-sectional view of the disposable lid secured upon a filled beverage container 20, featuring the outside rim 10, the main body of the flexible disc 14, the NPTCP 16, and the temperature indicating tab 18. The liquid is filled to a full level in the beverage container 22, which may be marked in some fashion 24 to act as an indicator to insure that the beverage container is filled to an adequate level. At the distal end of the NPTCP 16, the temperature indicating tab 18 will be below the surface of the beverage 22, and will be surrounded circumferentially 26 and at the bottom 28, but not at the top, by the beverage 22. The user will be able to view 30 down the NPTCP 16 to examine the color of the temperature indicating tab 18. FIG. 4 illustrates a cross sectional view of a partially-filled beverage container with the disposable lid attached. The container in this case is tipped on its axis.

Variations of the aforementioned design are possible. The NPTCP 16 could be of varying lengths. It could be located at any point on the flexible disc. Several different temperature indicating chemicals or substances could be utilized on the temperature indicating tab, which could turn a varying array of colors upon close approximation with a liquid at a varying array of temperatures. The temperature-indicating tab could be located at varying locations on the NPTCP 16.

The disposable lid has a flexible disc-like body and one slot opening at or near the

periphery of the body. Across the body of the flexible disc, near the periphery, is the non-permeable tapered cylindrical protrusion (NPTCP), extending approximately one and one half inches perpendicularly away from the main body of the flexible disc. At the distal end of the NPTCP, at the point furthest away from the body of the flexible disc, is the temperature-
5 indicating tab.

This lid is designed so that, when the beverage container is filled with liquid and this lid is affixed to said container, the NPTCP 16 extends down from the main body of the flexible disc, and its distal end will be submerged below the surface level of the liquid 22 in the container (see FIG. 3). The chemical or substance on the temperature indicating tab 18 will be
10 affected by the temperature of the liquid approximating it. Above a certain temperature, this chemical or substance will be, for instance, red in color. Below this temperature, it will be, for instance, blue in color. The colors and the particular temperatures chosen to be indicated can, of course, vary. The user can then view (see FIG. 3, 30) down the NPTCP 16 to identify the color on the temperature indicating tab 18, thereby noting that the temperature of the liquid in the
15 container 22 is either above or below the desired temperature. In the case of a partially- filled beverage container with this disposable lid attached (see FIG. 4), the user may simply tip the container enough so that the enclosed liquid 22 submerges the temperature indicating tab 18. The user can then view down the NPTCP 16 to view the color of the temperature indicating tab 18. Because the NPTCP 16 is tapered, this lid can be easily stacked for shipping
20 and storage.

As a variation, the NPTCP could be designed to segmentally retrace into the flat plane of the body of the flexible disc, then be segmentally extended away from the body of the flexible disc during usage.

As to a further discussion of the manner of usage and operation of the present invention, the same should be apparent from the above description. Accordingly, no further discussion relating to the manner of usage and operation will be provided.

With respect to the above description then, it is to be realized that the optimum dimensional relationships for the parts of the invention, to include variations in size, materials, shape, form, function and manner of operation, assembly and use, are deemed readily apparent and obvious to one skilled in the art, and all equivalent relationships to those illustrated in the drawings and described in the specification are intended to be encompassed by the present invention.

Therefore, the foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.